UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/764,516	01/27/2004	Raymond Aubin	71493-1210-aba	9954

7380 7590 06/14/2007

SMART & BIGGAR
P.O. BOX 2999, STATION D
900-55 METCALFE STREET
OTTAWA, ON K1P5Y6
CANADA

EXAMINER	
KIM, DAVID S	

ART UNIT	PAPER NUMBER
2613	

MAIL DATE	DELIVERY MODE
06/14/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

SK

Office Action Summary	Application No.	Applicant(s)	
	10/764,516	AUBIN ET AL.	
	Examiner	Art Unit	
	David S. Kim	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 1/27/04, 5/28/04, 7/9/04.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-32 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-32 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. **Claims 17-32** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

In particular, notice that these claims employ the following term "code means for [various functions]". However, it is generally known that "***code means***" do not perform such various functions. Rather, code in a computer program embodies instructions. A ***computer*** generally responds to these instructions to execute these various functions. Moreover, Applicant's disclosure does not enable on how "code means" perform these various functions. As a remedy, Examiner suggests Applicant to amend these claims so that the "code means" and the various functions are related in an enabled manner.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the

examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. **Claims 1-4, 8-9, 11,17-20, 24-25, and 27** are rejected under 35 U.S.C. 103(a) as being unpatentable over Iovanna et al. (U.S. Patent Application No. US 2006/0209785 A1, hereinafter "Iovanna").

Regarding claim 1, Iovanna discloses:

A method for co-modelling a packet network operating over an optical network, the method comprising the steps of:

(1) generating a cost parameter (520 in Fig. 5) based on a simulated packet network comprising packet network topology information (nodes in paragraph [0066]) and packet traffic information (data packet in paragraph [0066]) and

(2) generating a basic optical capacity (paragraph [0071]) based on a simulated packet transport network comprising optical network topology information (paragraph [0069]) and the cost parameter (paragraph [paragraph 0069]).

Iovanna does not expressly disclose:

the cost parameter comprising a basic packet capacity.

However, notice that this parameter may refer to capacity (Iovanna, paragraphs [0067-0068]). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to employ a cost parameter that comprises a basic packet capacity. One of ordinary skill in the art would have been motivated to do this since one intuitive way to express a cost parameter is in terms of capacity/bandwidth. That is, capacity/bandwidth of a link is a limited resource that provides a constraint for traffic flows. When one discusses the cost of a traffic flow to a link, one generally considers the cost of that traffic flow to the available capacity/bandwidth of that link.

Regarding claim 2, Iovanna discloses:

A method for co-modelling a packet network operating over an optical network according to claim 1, wherein the step of generating a basic packet capacity further comprises the steps of:

(1) combining the packet network topology information in the form of a packet network topology input (e.g., the consideration of any two nodes in paragraph [0066]) and the packet traffic information in the form of a packet traffic matrix input (a matrix is a common way to tabulate links and their respective traffic assignments; notice the treatment of each link in paragraph [0076]) to create the simulated packet network; and

(2) assigning the simulated packet network a flow to create the basic packet capacity for the simulated packet network (e.g., 520 in Fig. 5); and

wherein the step of generating a basic optical capacity further comprises the steps of:

(3) combining the optical network topology information in the form of an optical network topology input (e.g., the consideration of the physical level in paragraph [0069]) and the basic packet capacity (see the treatment of this limitation in claim 1 above) to form the simulated packet transport network; and

(4) assigning the simulated packet transport network a flow to create the basic optical capacity for the simulated packet transport network (notice the treatment of each link in paragraph [0076]).

Regarding claim 3, Iovanna discloses:

A method for co-modelling a packet network operating over an optical network according to claim 2, the method further comprising the steps of:

(1) supplying the packet network topology input (implied by the incorporation of the packet network topology input in claim 2);

(2) supplying the packet traffic matrix (implied by the incorporation of the packet traffic matrix in claim 2);

(3) supplying the optical network topology (implied by the incorporation of the optical network topology in claim 2).

Regarding claim 4, Iovanna discloses:

A method for co-modelling a packet network operating over an optical network according to claim 2, further comprising generating the packet network topology input, the packet traffic matrix input and

the optical network topology input for use in co-modelling a packet network operating over an optical network (generation of these limitations is implied by the incorporation of these limitation in claim 2).

Regarding claim 8, claim 8 is a method claim that corresponds largely to the method claim 1. Therefore, the recited steps in method claim 1 read on the corresponding steps in method claim 8. Claim 8 also includes limitations absent from claim 1. Iovanna also discloses these limitations:

(3) performing analysis on the simulated packet transport network (e.g., 565 in Fig. 5, performance comparisons in Figs. 6-9).

Regarding claim 9, claim 9 is a method claim that introduces limitations that correspond to the limitations introduced by method claim 2. Therefore, the recited steps in method claim 2 read on the corresponding steps in method claim 9.

Regarding claim 11, Iovanna discloses:

A method for co-modelling and analyzing a packet network operating over an optical network according to claim 8, wherein the step of performing analysis on the simulated packet transport network comprises network capacity planning of the simulated packet transport network (performance comparisons in Figs. 6-9).

Regarding claims 17-20, 24-25, and 27, claims 17, 18, 19, 20, 24, 25, and 27 are computer usable medium claims that introduce limitations that correspond to the limitations introduced by method claims 1, 2, 3, 4, 8, 9, and 11, respectively. Therefore, the recited steps in method claims 1-4, 8-9, and 11 read on the corresponding limitations in computer usable medium claims 17-20, 24-25, and 27.

6. **Claims 5-7 and 21-23** are rejected under 35 U.S.C. 103(a) as being unpatentable over Iovanna as applied to the claims above, and further in view of the admitted prior art (hereinafter the "APA").

Regarding claim 5, Iovanna discloses:

A method for co-modelling a packet network operating over an optical network according to claim 2, wherein the packet network topology input comprises information regarding a plurality of routers (routers 10-15 in Fig. 2) in the simulated packet network, information regarding source-destination router ordered pairs in the simulated packet network (e.g., pair of nodes in paragraph [0077]), and information

regarding a plurality of packet links in the simulated packet network (e.g., link information in paragraph [0076]).

However, Iovanna does not expressly disclose:

wherein step (2) of the method further comprising the steps of:

setting capacity to zero for all packet links;

performing a series of steps, as follows, for each source-destination router ordered pair;

A. determining a shortest packet path between routers;

B. establishing a source-destination packet traffic flow based on the shortest packet path; and

C. incrementing capacity of each packet link traversed by the packet traffic flow; and

increasing capacity of packet links per packet network engineering guidelines.

Regarding "setting capacity to zero for all packet links", a zero setting is a common default value for computations. So, this would be an obvious variation.

Regarding "series of steps" for each pair, it would be obvious to perform route computation (e.g., paragraph [0077]) for each pair for the purpose of thoroughly computing routes for all pairs.

Regarding steps A and B, the APA teaches that these steps correspond to known traffic engineering techniques (APA, p. 14, l. 12-19). So, obvious variations could employ these techniques for their known benefits.

Regarding step C, one would obviously increment the capacity assignment for the packet links traversed by the packet traffic flow from zero to their assignment values.

Regarding "increasing capacity", one would obviously do so to maximize the capacity for the packet links for maximum traffic throughput.

Regarding claim 6, Iovanna discloses:

A method for co-modelling a packet network operating over an optical network according to claim 2, wherein the optical network topology input comprises information regarding a plurality of cross-connect switches (OXCs 20-25 in Fig. 2) in the simulated packet transport network and information

regarding a plurality of optical links (e.g., physical level in paragraph [0069]) in the simulated packet transport network.

However, Iovanna does not expressly disclose:

wherein step (4) of the method further comprising the steps of:

setting capacity to zero for all optical links;

performing a series of steps, as follows, for each packet link between two routers:

A. determining a shortest optical path between cross-connect switches supporting the two routers;

B. establishing an optical connection to support the packet link; and

C. incrementing capacity of each optical link traversed by the optical connection; and

increasing capacity of optical links per optical network engineering guidelines.

Regarding "setting capacity to zero for all packet links", a zero setting is a common default value for computations. So, this would be an obvious variation.

Regarding "series of steps" for each pair, it would be obvious to perform route computation (e.g., paragraph [0077]) for each pair for the purpose of thoroughly computing routes for all pairs.

Regarding steps A and B, the APA teaches that these steps correspond to known traffic engineering techniques (APA, p. 16, l. 9-18). So, obvious variations could employ these techniques for their known benefits.

Regarding step C, one would obviously increment the capacity assignment for the optical links traversed by the optical connection from zero to their current assignment values.

Regarding "increasing capacity", one would obviously do so to maximize the capacity for the optical links for maximum traffic throughput.

Regarding claim 7, claim 7 is a method claim that introduces limitations that correspond to the limitations introduced by method claim 6. Therefore, the recited steps in method claim 6 read on the corresponding steps in method claim 7.

Regarding claims 21-23, claims 21, 22, and 23 are computer usable medium claims that introduce limitations that correspond to the limitations introduced by method claims 5, 6, and 7, respectively. Therefore, the recited steps in method claims 5-7 read on the corresponding limitations in computer usable medium claims 21-23.

7. **Claims 10 and 26** are rejected under 35 U.S.C. 103(a) as being unpatentable over Iovanna as applied to the claims above, and further in view of Doverspike et al. (U.S. Patent Application Publication No. US 2004/0107382 A1, hereinafter "Doverspike").

Regarding claim 10, Iovanna does not expressly disclose:

A method for co-modelling and analyzing a packet network operating over an optical network according to claim 8, wherein the step of performing analysis on the simulated packet transport network comprises analyzing survivability of the simulated packet transport network.

However, such analysis of survivability is a common consideration for optical networks, as shown by Doverspike (e.g., consideration of fault recovery and restoration in paragraphs [0002-0004]). One of ordinary skill in the art would have been motivated to do this since it is generally known that modern telecommunication networks are reconfigurable and should provide for fast restoration from network failures (Doverspike, paragraph [0002]).

Regarding claim 26, claim 26 is a computer usable medium claim that introduces limitations that correspond to the limitations introduced by method claim 10. Therefore, the recited steps in method claim 10 read on the corresponding limitations in computer usable medium claim 26.

8. **Claims 12-16 and 28-32** are rejected under 35 U.S.C. 103(a) as being unpatentable over Iovanna in view of Doverspike as applied to the claims above, and further in view of Ghani et al. ("On IP-over-WDM Integration", hereinafter "Ghani").

Regarding claims 12, Iovanna in view of Doverspike discloses:

A method for co-modelling and analyzing a packet network operating over an optical network according to claim 8, wherein the step of performing analysis on the simulated packet transport network comprises performing survivability analysis (e.g., consideration of fault recovery and restoration in paragraphs [0002-0004]).

Iovanna in view of Doverspike does not expressly disclose:

wherein an optical failure is known to occur within the simulated packet transport network, the step further comprising the steps of:

establishing at least one protection mechanism for each point-to-point connection in the simulated packet transport network;

performing a series of steps, as follows, for each optical link in the optical network:

A. switching all affected packet traffic flow to an at least one protection mechanism;

B. incrementing capacity of each optical link traversed by the at least one protection mechanism; and

C. restoring initial capacity values; and

summing capacity requirements.

Regarding "establishing at least one protection mechanism" for each connection, it would be obvious to consider at least one protection mechanism for each connection for proper consideration of fault recovery for each connection. Additionally, proper consideration for each connection can lead to improved channel availability, as shown by the maximally-disjoint teaching of Ghani (p. 78, col. 2, l. 5).

Regarding step A, switching all affected traffic to the protection mechanism is the obviously intuitive way to treat affected traffic. Otherwise, traffic not on the protection mechanism would be lost.

Regarding step B, one would obviously increment the capacity assignment for the optical links traversed by the protection mechanism to their current assignment values.

Regarding step C, one would obviously do so to resume the normal "faultless" network operation condition.

Regarding claim 13, claim 13 is a method claim that introduces limitations that correspond to the limitations introduced by method claim 12. Therefore, the recited steps in method claim 12 read on the corresponding steps in method claim 13.

Regarding claims 14, Iovanna in view of Doverspike and Ghani discloses:

A method for analyzing survivability of a simulated packet transport network comprising a packet network (Iovanna, upper part of Fig. 2) and an optical network (Iovanna, lower part of Fig. 2), wherein the packet network is operating over the optical network, wherein an optical failure (e.g., Doverspike, "fiber cut" in paragraph [0030]) is known to occur within the simulated packet transport network and wherein packet link protection (e.g., Doverspike, 406 in Fig. 4) is performed in the packet network.

Iovanna in view of Doverspike and Ghani does not expressly disclose:

the method comprising the steps of:

establishing at least one back-up packet traffic flow tunnel for each packet link in the simulated packet transport network;

performing a series of steps, as follows, for each optical link in the optical network:

A. taking an optical link out of service;

B. performing a series of steps, as follows, in a nested process for each packet link affected by the optical failure;

i. switching all packet traffic flow on the affected packet link to an at least one back-up packet traffic flow tunnel;

ii. incrementing capacity of each packet link traversed by the at least one back-up packet traffic flow tunnel; and

iii. incrementing capacity of each optical link traversed by an optical connection supporting the packet link; and

C. restoring initial capacity values; and

summing packet link capacity requirements and optical link capacity requirements.

Regarding "establishing at least one back-up packet traffic flow tunnel" for each packet link, it would be obvious to consider at least one back-up packet traffic flow tunnel for each packet link for proper consideration of fault recovery for each packet link. Additionally, proper consideration for each packet

link can lead to improved channel availability, as shown by the maximally-disjoint teaching of Ghani (p. 78, col. 2, l. 5).

Regarding step A, the "optical failure" implies that an optical link is taken out of service.

Regarding step B, a nested process is a common and obvious way to loop through each affected link.

Regarding step i, switching all affected traffic to the protection mechanism is the obviously intuitive way to treat affected traffic. Otherwise, traffic not on the protection mechanism would be lost.

Regarding steps ii and iii, one would obviously increment the capacity assignment for the packet and optical links traversed by the protection mechanism to their current assignment values.

Regarding step C, one would obviously do so to resume the normal "faultless" network operation condition.

Regarding "summing" capacity requirements, one would obviously do so to find total capacity requirements for the entire network.

Regarding claims 15, Iovanna in view of Doverspike and Ghani discloses:

A method for analyzing survivability of a simulated packet transport network comprising a packet network (Iovanna, upper part of Fig. 2) and an optical network (Iovanna, lower part of Fig. 2), wherein the packet network is operating over the optical network, wherein an optical failure (e.g., Doverspike, "fiber cuts" in paragraph [0004]) is known to occur within the simulated packet transport network and wherein packet link protection is performed in the optical network (e.g., Doverspike, optical layer failure recovery in paragraph [0004]).

Iovanna in view of Doverspike and Ghani does not expressly disclose:

the method comprising the steps of:

establishing at least one protection tunnel for each optical connection in the simulated packet transport network;

performing a series of steps, as follows, for each optical link in the optical network:

A. taking an optical link out of service;

B. switching all affected optical connections to an at least one protection tunnel;

C. incrementing capacity of each optical link traversed by the at least one protection tunnel; and

D. restoring initial capacity values; and

summing the optical link capacity requirements.

Regarding "establishing at least one protection tunnel" for each optical connection, it would be obvious to consider at least one protection tunnel for each optical connection for proper consideration of fault recovery for each optical connection. Additionally, proper consideration for each optical connection can lead to improved channel availability, as shown by the maximally-disjoint teaching of Ghani (p. 78, col. 2, l. 5).

Regarding step A, the "optical failure" implies that an optical link is taken out of service.

Regarding step B, switching all affected traffic to the protection mechanism is the obviously intuitive way to treat affected traffic. Otherwise, traffic not on the protection mechanism would be lost.

Regarding step C, one would obviously increment the capacity assignment for the optical links traversed by the protection mechanism to their current assignment values.

Regarding step D, one would obviously do so to resume the normal "faultless" network operation condition.

Regarding "summing" capacity requirements, one would obviously do so to find total capacity requirements for the optical network.

Regarding claims 16, Iovanna in view of Doverspike and Ghani discloses:

The method according to claim 14, wherein the packet traffic flow is LSP (Label Switch Path) traffic flow (Iovanna, paragraph [0054]).

Regarding claims 28-32, claims 28, 29, 30, 31, and 32 are computer usable medium claims that introduce limitations that correspond to the limitations introduced by method claims 12, 13, 14, 15, and 16, respectively. Therefore, the recited steps in method claims 12-16 read on the corresponding limitations in computer usable medium claims 28-32.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David S. Kim whose telephone number is 571-272-3033. The examiner can normally be reached on Mon.-Fri. 9 AM to 5 PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth N. Vanderpuye can be reached on 571-272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DSK

JASON CHAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600